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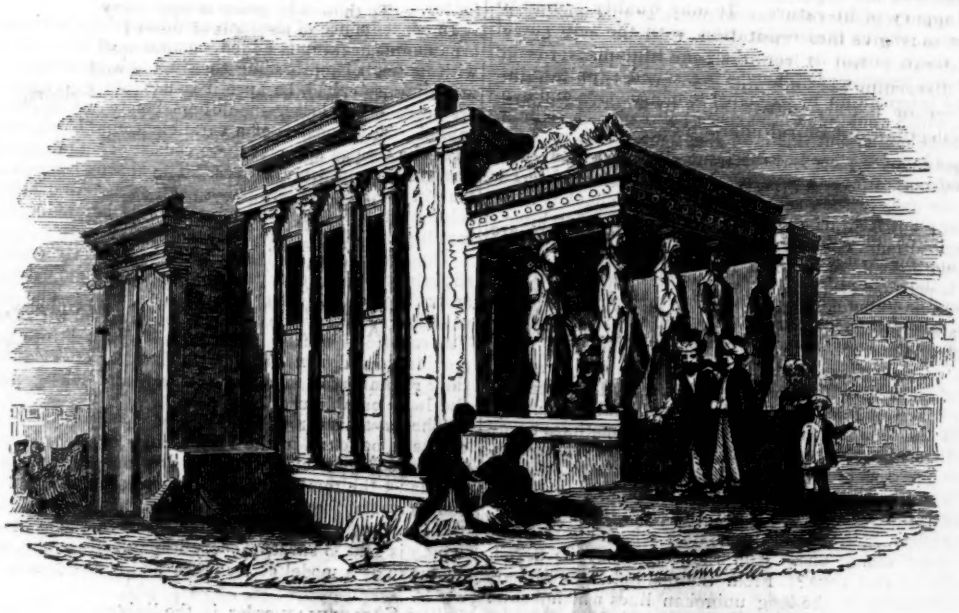
A BRIEF HISTORY OF ARCHITECTURE. No. II.



REMAINS OF THE TEMPLE OF PANDROSUS AT ATHENS.

DORIC ARCHITECTURE.

THE Doric order may be said to consist of three parts, viz., the *stylobate*, the *column*, and the *entablature*.

The word *stylobate* is derived from the Greek, and signifies *a basement for columns*. The stylobate differs from a pedestal in this: the former is a continued unbroken substructure, or basement to columns, while the latter term is confined to insulated supports.

In the Doric order the stylobate is in height from two thirds to a whole diameter of the column. It is usually constructed in three equal courses, which recede gradually, the one above from the one below; and on the floor of the uppermost surface, or step, the columns rest. The object of the stylobate is not so much to afford access to the portico, as to impart an air of firmness to the structure, which it does in an eminent degree.

The columns are short, varying from four to six diameters in height; they are without bases, because of the narrowness of the intercolumniations, and also on account of their tapering form. They spread out at the bottom, and so afford a sufficient base, not only in reality, but also to satisfy the eye: whereas, did the columns rest on bases, not only would great inconvenience be experienced, but a heavy awkward effect would be produced, which is avoided altogether by terminating the columns on the floor of the stylobate. The columns taper in a graceful curve; and this tapering is rendered more apparent by the flutings which lessen the massive effect of the columns; and produce a pleasing variety of light and shade. The flutings, which are generally twenty in number, are wide and shallow, separated by sharp edges only, thus producing an effect of breadth: they follow the general curve of the shaft, and detail on the floor of the stylobate.

The capital of the columns consists of an *echinus* (or *egg*-shaped projection), and a deep square *abacus* (or tile), above it. The echinus swells out, so as to exceed the diameter of the foot of the column; which, however, it appears to equal, on account of the distance at which it is always seen.

We come now to speak of the entablature, or horizontal mass, resting upon the abaci of the columns. The reader will remember that the entablature is composed of architrave, frieze, and cornice.

The architrave is the first member of the entablature, and rests immediately on the abaci. It presents one plain broad face, and is proportioned to the weight it has to bear. Its height is usually equal to the narrowest diameter or *neck* of the column. The width of its *soffit*, or under side, is midway between the two extreme diameters of the column; so that it overhangs the upper part of the shaft: it does not, however, project over the abacus, which, by presenting a more extended surface, seems better calculated to support the pressure of the whole entablature.

The frieze is usually of the same dimensions as the architrave, from which it is separated by a projecting band, or fillet, called *tænia*. The frieze is ornamented by slightly projecting tablets, in which are cut two *glyphs*, or grooves, and two half-glyphs, one on each of its outer edges, thus making three glyphs, or grooves, and giving the ornament its appropriate name of *triglyph*, an ornament which is peculiar to the Doric order. The width of each triglyph is rather more than half the lower diameter of the column. One triglyph is situated over each column, and one over each intercolumn.

The spaces between the triglyphs are called *metopes* (a Greek word signifying *spaces between*), which were, it is said, originally intended to represent the ends of the beams which rested on the architrave, and formed the inner roof, or ceiling. The metopes are squares, and were sometimes occupied with sculptures in bas-relief.

The triglyph is said to have been originally formed to prevent the rain from adhering to the ends of the beams: the water thus running down the grooves, and dropping from the tænia, is said to have suggested to an early Grecian

architect another ornament peculiar to the Doric order; viz., the *guttæ*, or drops; which are attached to a fillet, and placed below each triglyph, under the moulding of the architrave. However fanciful the reputed origin of the guttæ may appear, the use of this beautiful and simple ornament is evident: it seems to break the monotony of the line to which it is attached; and by extending some ornament from the frieze to the architrave, it produces the effect of making these two important members of the entablature harmonize with each other. The eye, accustomed to look upon a Doric building with the pleasure and satisfaction which it is so well calculated to produce, would soon be sensible of a material deficiency, if this apparently humble ornament were removed.

The metopes are regulated by the height of the frieze; and this again regulates the intercolumns, or spaces *between* the columns; for as there must be a triglyph over every column, there cannot be more than one triglyph over each intercolumn, because each metope is a square; unless, indeed, the intercolumn be extended to one metope and one triglyph, which would make the space between each column half as wide again: but this is seldom done.

The pediment is placed at the front or at the end of a Doric building, or over a portico. Its object is obviously to enclose the ends of the roof, whose triangular shape it usually takes; but it forms a very important part in architectural composition. The pediment is covered with a projecting cornice, with a bold ovalo [echinus] moulding. The Doric cornice is peculiar in having attached to its soffit a series of shallow rectangular tablets or *mutules*, studded with guttæ. These tablets are to the cornice what the triglyphs are to the frieze. One of these tablets corresponds with each metope, as well as with each triglyph; the effect of which is to produce a beautiful gradation of parts. The deep triangular space enclosed by the cornice and ovalo moulding is called the *tympanum*. This space was sometimes occupied with sculptures representing subjects in connexion with the purposes of the edifice.

"Such are the materials," observes a modern architect, "of which the Greeks composed their beautiful temples. Of their effect, however, it is impossible to form a competent idea without seeing one. And whence, it may be asked, does their interest arise? From their simplicity and harmony: simplicity in the long unbroken lines which bound their forms, and the breadth and boldness of every part; such as the lines of the entablature and stylobate, the breadth of the corona, of the architrave, of the abaci, of the capitals, and of their ovalos also; in the defined form of the columns, and the breadth of the members of the stylobate;—harmony in the evident fitness of every part to all the rest. The entablature, though massive, is fully upborne by the columns, whose spreading abaci receive it, and transmit the weight downwards by the shafts, which rest on a horizontal and spreading basement; the magnitude of every part, being determined by the capacity of the sustaining power. Besides graceful and elegant outline, and simple and harmonious forms, these structures possess a bewitching variety of light and shade, arising from the judicious contour and arrangement of mouldings, every one of which is rendered effective; by the fluting of the columns and the columnar capital, whose broad, square abacus, projects a deep shadow on the bold ovalo, which mingles it with reflections, and produces on itself almost every variety. The play of light and shade, again, about the insulated columns is strongly relieved and corrected by the deep shadows on the walls behind them; and in the fronts, where the inner columns appear, the effect is enchanting. For all the highest effects which architecture is capable of producing, a Greek peripteral* temple of the Doric order, is perhaps unrivalled †."

We now proceed to inform the reader of the chief peculiarities of the IONIC order. Certain features of one order are of course common to all; and having just described the Doric somewhat fully, we must now confine ourselves, for what follows, to the more important points of *variation* in the orders, whereby the reader will have no difficulty in assigning to its proper order, any building in the pure Grecian style, which may invite his attention, before he proceeds to an examination of its more important details.

The general peculiarity of the Ionic order is delicacy and elegance; as that of the Doric is massiveness and bold effect; accordingly, in the Ionic, all the arrangements are skilfully ordered, so as to appeal, as it were, to the poetry of the mind of the spectator. The columns are tall and slender; their height being usually nine diameters. Each column rests upon a base composed of two *tori*, or convex mouldings, with a concave moulding, called the *scotia*, between them. The flutings in the shaft are twenty-four in number, with spaces or fillets left between them, each fillet being equal in breadth to about one fourth of the flute. The flutes are thus multiplied and set more apart from each other: they are much narrower than in the Doric, and deeper in proportion to their breadth: they terminate in half circles or ellipses; the shaft itself does not taper so suddenly as in the Doric. The upper torus of the base is either fluted horizontally, so as to harmonize with the shaft, or it is enriched with an *interlaced* network-ornament, called a *guilochos*.

In consequence of the increased height of the column, an ornamental necking is added, composed of the honey-suckle with its tendrils embracing the shaft; above this is an *ovalo*-moulding, so called, because it is cut into *eggs;* and there are some other lesser mouldings before we arrive at the capital. This consists of a parallelogramic block, on whose faces the volutes are cut: these consist of spiral mouldings, arranged into graceful curves. The abacus is much smaller than in the Doric order; it is so set, as not to overhang the volutes: if it did so, a heaviness would be produced, which would prove offensive to the eye.

The architrave is divided into three nearly equal faces, slightly projecting over each other, and crowned with a *cyma** *recta* moulding, either carved or plain. The frieze is usually a plain surface, but may be enriched with sculpture. The cornice is equally simple: it is divided into parts by mouldings and *dentil* bands, which latter are so called from their resemblance to a row of *teeth*, and belong peculiarly the Ionic entablature.

The most numerous examples of the Ionic order were of course to be found in the Ionian cities of Asia Minor; but in consequence of the many destructive inroads of the Persians, the temples were laid in ruins, and so few of their remains exist there. One of the most beautiful specimens of the Grecian Ionic, is that of the Minerva Polias at Athens, which is said to surpass every other existing relic, and may be taken as a model of elegance and completeness in this order.

The CORINTHIAN order is the lightest of all three, and admits of the greatest display of ornament. Its column, like the Ionic, consists of base, shaft, and capital: its average height may be stated at ten diameters; the base is composed of three tori and scotiæ, divided by fillets, and standing on a plinth. The shaft is fluted; the flutings are separated by fillets rather more than a quarter of each fluting in width; the flutings are semi-elliptical, but cut so deep as almost to become semicircular; at the head the flutings terminate in leaves to which the fillets are stalks. The core of the capital is cylindrical, and of the same diameter as the shaft; it is banded by one row of water-leaves, and by another of acanthus, or olive leaves (which are peculiar to the order), and covered by a scooped abacus, between which and the leaves *cauliculi*, or little stems of a plant, spring up, curling gracefully in the spiral forms of volutes.

The entablature of this order admits of more ornament than that of the Ionic. In the cornice is a band of modillions which are peculiar to this order. The frieze is plain; the architecture is divided into three faces by *astragals*, or small mouldings, and is surmounted by a *cymatium*, which is the same as the *cyma* spoken of before.

Such then is a brief account of the three orders of architecture, as invented by the ancient Greeks. In the details given above, we have stated the peculiarities of each order with some degree of precision; it must not, however, be supposed that the Grecian architects followed implicitly the arrangements we have stated. The love of novelty and variety is among all people and in all ages so prominent a feature of the human mind, that it is everywhere displayed in the existing remains of Grecian architecture. Still the broad features of each order are attended to, and whatever variations were adopted, harmony is preserved; although in respect of proportion and ornamental detail, no two examples may probably agree. It was necessary to offer the reader descriptions from approved types, without informing

* A temple was called *peripteral*, when the columns went *all round* the building.

† *Encyclopædia Britannica*; article, Architecture.

* The word *cyma* is Greek (κυμα) and means a *wave*. It is used in reference to two sorts of mouldings, distinguished by the manner of their curvature into the *cyma recta*, and the *cyma reversa*.

him of the variations; these he will be able to take note of for himself, when he is able at once to recognise an order by a view of its principal elements.

There is, however, one variation of the Greeks which ought not to be passed over in silence, since it has been adopted by modern architects, although perhaps with questionable taste. We mean the adoption of male and female figures in the place of columns, supporting a massive Doric entablature.

The male figures are represented in a crouching posture, with their hands tied before them. They are called *Persians*, and are said to have been introduced by Pausanias, about the year 478 B.C., to celebrate the victory of Platæa, in which the Persian invaders were completely overthrown. The spoils of this victory were devoted to the erection of a commemorative monument, where these supporting figures were first introduced, representing, it is said, some of the principal Persian generals, who had been killed or taken prisoners.

The female figures are represented with various sorts of ornamental attire; they are called *Carians* or *Caryatides*, and are meant to celebrate the defeat of that people by the Athenians.

The effect of these figures is in general unpleasant; they are represented as crouching beneath the ponderous weight above them. The human form is thus degraded, and the spectator is reminded of a degree of physical labour which interferes with the enjoyment of an architectural structure. The Greeks had a powerful motive for the adoption of these figures, which perhaps affords them an excuse for doing so. The figures of the Persians reminded them of their oppression by this people, who were at length defeated; the Carians also had been long at war with the Athenians, and at length shared a similar fate: and to represent this conquered people in the lowest possible state of degradation, they placed upon the sculptured representations of them the heaviest entablature, viz. the Doric; but there is a display of savage feeling in this device which we would willingly avoid.

It is however necessary to remark that the above account of the origin of the Caryatid figures is due to Vitruvius, who, with his accustomed zeal in referring everything to its original source, often oversteps the bounds of sober inquiry, to deal in hazardous conjecture. The use of these Caryatid figures is said by other writers to be more ancient than the invasion of Xerxes, and to have been borrowed by the Greeks from Egypt. Others suppose them to represent the virgins engaged in the worship of Diana, and bearing on their heads the sacred vessels of the temple.

With respect to the mechanical disposition of the materials adopted by the ancient Greeks in their structures, we knew but little, except what Vitruvius informed us of, until the labours of modern travellers threw some light upon the subject.

The first material employed by the Greeks in their sacred buildings was *timber*; then *brick*, the art of making which they are said to have derived from the Egyptians; *stone* was next employed; and last of all, the most beautiful, as well as permanent substance which can enter into the construction of a noble edifice, viz., *marble*.

We learn from Messrs. Stuart and Revett, that the wall enclosing the cella of the Parthenon was formed of horizontal rows of marble blocks, each of the same thickness as the wall itself; and that the junctions in each alternate horizontal course were vertically over each other. This seems to have been the method adopted by the Greeks, when great durability was desired.

The pavement is composed of square stones of equal size; and the joints are so neatly fitted, as scarcely to be seen. The columns consist of single blocks placed one upon another, the height of each block being about two thirds of a diameter of the column. The architrave consists of three blocks in thickness, and one course in height: it rests on the capitals of the columns by its own weight alone; each block extends from the axis of one column to the axis of the next. The frieze is formed of one course in height; the metopes are thin stone tablets attached to the face of the frieze: but the blocks on which the triglyphs are cut, are partly inserted in the frieze. The cornice is formed of blocks, each, in extent of front, equal to one triglyph and one metope.

In order to accomplish that close union of the marble blocks which has so often been the object of admiration to the moderns, the faces, which were to be brought into contact vertically, had each its middle part hollowed out into a square or rectangular form to a small depth, so as to leave a raised margin a few inches broad all round the exterior. The surface of this margin was highly polished; so that the corresponding margins of any two blocks came into such close contact, that the external line of junction is often imperceptible. The object of hollowing out the middle part of each block, was to avoid the labour of polishing the whole of the surface.

It seems to have been usual to add the ornamental parts after the building was erected, and not during the progress of erection. These ornaments were cut out of the solid stone, the surface thereof being first smoothed. Even the flutings of the columns seem, from the appearance of some unfinished buildings, to have been executed after the erection of the columns.

4. ROMAN ARCHITECTURE.

> These roads that yet the Roman hand assert,
> Beyond the weak repair of modern toil;
> These fractured arches, that the chiding stream
> No more delighted hear; these rich remains
> Of marbles now unknown, where shines imbibed
> Each parent ray; these massy columns, hewed
> From Afric's farthest shore; one granite all,
> These obelisks high-towering to the sky,
> Mysterious marked with dark Egyptian lore;
> These endless wonders that this sacred way*
> Illumine still, and consecrate to fame;
> These fountains, vases, urns, and statues, charged
> With the fine stores of art-completing Greece.
>
> THOMSON'S *Poem on Liberty*.

THE architectural labours of the Greeks were chiefly confined to the erection and embellishment of their temples, the entrances of their cities, and their places of public exercise; their private dwellings claimed but little of their regard, and what in another country would be considered quite necessary for the comfort of the people, was in Greece neglected. The Romans greatly excelled the Greeks in their attention to objects of national utility; they not only gratified their piety or vanity by erecting splendid temples to their gods, but they constructed fine roads and bridges, well adapted to the internal communications of their vast empire; as also immense sewers for draining their cities; and magnificent aqueducts for furnishing them with abundant supplies of pure water.

Long before any communication was established with Greece, the Italians seem to have cultivated architecture. The people of Etruria, or Tuscany, are said to have invented a particular order, called THE TUSCAN; and it is believed that the Romans employed Tuscan architects to execute their great works, before they had made acquaintance with the splendid results of Grecian art.

It is, however, supposed by some that the Tuscan is only a modification of the very ancient Doric order. It is further said, in support of this opinion, that a colony of Arcadians, under Evander, established themselves in Italy at a very early period, and introduced a style of building as practised in Greece. This may appear the more probable if we compare the two orders. The Doric, divested of a few mouldings and of its triglyphs, its columns being reduced a diameter or two in height, would furnish the Tuscan order. It is the most solid and simple of all the orders: it admits of no ornaments whatever. The column is about five modules in height: the base is composed of torus, fillet, and square plinth; and the capital consists of an abacus, torus, and fillet. The entablature is composed of a plain architrave, frieze, and cornice. It is proper to state, that no regular example of this order occurs among antique remains. Vitruvius refers to it under the appellation of *The Rustic*, from its original simplicity and rudeness of style: the term *Tuscan* was bestowed by the modern Italians, from its supposed Tuscan origin; but the proportions and parts of this order as stated above are given by Vitruvius. From the massive character of this order, and the absence of ornament, it has been quaintly compared by Wotton to a sturdy labourer, in homely apparel. It is, however, from its simplicity well adapted to markets, sheds, shambles, and constructions of a like character.

It does not appear that architecture was known in Rome before the time of the Tarquins; but from that period we meet with various indications of a growing acquaintance with the art. During the reign of the elder Tarquin, the ancient temple of Jupiter in the capitol was commenced, by

* *Via sacra.*

Etruscan workmen: according to Cicero, it had two rows of columns in the interior, by which it was divided into three parts, and its front was crowned with a pediment. We find from the same authority, that it was twice destroyed, and as often rebuilt on the same foundation.

The ancient temple of Vesta, supposed to have been built by Numa Pompilius, was of a circular form, and surrounded by columns whose capitals resembled those of the Corinthian order. The double temple of the Sun and Moon, which is supposed by some to have been dedicated to Venus and Rome, must also have displayed great magnificence of character; nor can we doubt that many structures were erected in Italy and Rome during the times of the monarchy and commonwealth, which have since mingled with the dust of the soil upon which they stood.

No sooner had a regular intercourse been established between Italy and Greece, than the Italian artists began to copy the works of their more refined neighbours: but either through want of taste to appreciate the simple beauties of Grecian architecture, or from an unwillingness to appear as mere copyists, they undertook to vary the style and increase the ornaments of the different orders: hence, no doubt, arose the fifth order, called *The Roman*, or COMPOSITE, in which the volutes of the Ionic are united with the foliage of the Corinthian. This order is very likely to have been produced by some artist, who, in despair of originating anything better, combined the ornamental parts of the two orders already existing. It is doubtful whether the Composite Order existed under that name in the time of Vitruvius, as he does not give any particular description of it, though it is supposed to be alluded to in the first chapter of his fourth book.

There is one particular in which Italy has an apparent right to assert her superiority;—for to that country is attributed the invention of the *arch* and *dome*. No vestiges appear of such an arrangement of materials in the records of the modes of building of any nation, prior to its intercourse with Rome; and, though it is just possible that the invention may have taken place in some part of Asia, where, owing to the scarcity of large masses of stone, such a contrivance would be very desirable and necessary, yet the absence of authenticated examples of such a form of building, makes it probable that it was entirely unknown. There are many appearances in nature, which might suggest the idea of a curved entrance to a building: the openings of caverns, and the perforations in rocks, frequently assume this form; and we accordingly find that the ancients did adopt a similar form. Mr. Hamilton describes an artificial perforation in the shape of an arch which was made in a solid wall, and served as the doorway to an ancient fort at Ephesus; but neither the perforated wall nor the covered passage, can be classed under the name of the "arch." Such methods have been practised in all countries, and are nearly as old as the art of building itself. But of that kind of arch which consists of a number of wedge-like stones, disposed in a vertical plane, and supporting themselves in the air by their mutual pressure, we meet with no sign among any of the remains of the early architecture of Greece; there was no bridge even over the river Cephissus, which crosses the road to Athens, until one was erected by the Romans when they were in possession of the country. The *tholos* of Homer and other Greek authors, though usually translated *dome*, signified a building of a circular form, without regard to the roof; and the roof of the temple of the Winds*, which approaches more nearly to the character of a dome than any other, being composed of twenty-four separate blocks, which abut on a key-stone at the vertex, are not considered as exhibiting any feeling of the principle of the arch.

Whoever may have been the first inventor of the arch, the Romans have the credit of bringing it into general use, and of applying it to the most important purposes. At Tusculum, near Rome, is a conduit, which is considered to be one of the earliest specimens of arches. It is a subterranean channel proceeding from a reservoir under a mountain; it has vertical sides, and is covered with stones in the form of frusta of wedges, abutting against each other at their oblique sides, so that the principle of the arch is distinctly exhibited. We may mention next to these, the arches found in part of the ancient walls of Rome, built by Tullius, and the *Cloaca maxima*, supposed to have been the work of Tarquin the elder, which is formed of immense blocks of stone united without cement, and exhibiting a semicircular vault as perfect as any subsequently erected.

* For a further account of the celebrated "Temple of the Winds, see *Saturday Magazine*, Vol. XIV., p. 54.

The time of Julius Cæsar affords the next example, of which we have any knowledge, of the employment of the arch. The theatre of Marcellus, erected by him, is adorned on the exterior with rows of arches; and as this theatre is supposed to have been an imitation of one erected by Pompey, and his theatre again to have been imitated from that at Mitylene of the time of Alexander, it has been thence inferred that there must have been arches in the last-mentioned buildings, like those in the theatre of Marcellus. But as both Pompey's theatre and that of Mitylene have entirely disappeared, there is no possibility of ascertaining this to be the fact; and thus Italy may still maintain her pretensions to the invention of the arch and dome.

We must not, however, forget the claims of the Chinese to the invention of the arch. It seems to have been known to them from time immemorial, and certainly long before its introduction into Europe. The arch covers the gateways in their great wall; they employed it in the construction of monuments to their illustrious dead, and in the formation of their bridges. Kircher tells us of stone bridges three or four miles long, and of an arch, of the incredible span of six hundred feet.

Arches must have been used in Rome, long before the time of Vitruvius, who flourished in the age of Augustus, from the unequivocal manner in which he speaks of them; he gives directions for their construction in that workmanlike manner, which must evidently have been the result of long and intimate acquaintance with his profession.

Architecture seems to have attained a pitch of great excellence in the time of Augustus. The then known world was almost entirely subject to Rome: a general peace prevailed, and the politer and kinder arts were cultivated under the auspices of the Emperor, and fostered by men, whose capacious designs, and great mechanical skill, still continue to claim our wonder and attention. Architecture shared in the general prosperity of the peaceful arts. Augustus caused the erection of many superb edifices, and so far changed the aspect of "imperial Rome," as to gain the high encomium of having "found it built of brick, and left it of marble."

The justice of this encomium may, however, be questioned. The exaggerated accounts of travellers, who talk of marble temples, palaces, and baths, have contributed to raise a false idea of the richness of the materials used in buildings at Rome. The truth is, that the majority of the edifices is composed of brick, and that there are only a few columns and their entablatures, that are of marble, or granite, and two or three buildings of Travertine stone. At Rome, and in the provinces, the surface of the buildings was covered with stucco, and this often received much decoration. The edifices were erected for the purposes of real utility and convenience, exhibiting almost every variety of structure which could be required for man in a state of civilization, and forming in this respect a marked difference between the Romans themselves, and their predecessors, in civilization. In Egypt we find few indications of other edifices, than such as were erected for temples or tombs; nor can we discover many traces in Greece of buildings constructed for a different purpose: but at Rome, owing perhaps in part to the discovery of the arch, the variety of form was endless, and the rudest and cheapest materials were speedily applied to some valuable purpose. The arch entered into the construction of every building, and superseded the use of long beams of timber; indeed, the opinion has been entertained that the Romans were very little skilled in the application of timber to their dwellings. But, while this opinion is favoured by the appearance of portions of the ancient houses discovered at Rome, and by the use of mosaic pavement instead of flooring, and stucco in the place of wainscoting; it becomes at the same time very questionable, when we remember the dreadful conflagration which took place in the reign of Nero, which could hardly have prevailed to such an extent, if timber had not been employed in the ordinary houses; and also the remarkable bridge, built by Trajan over the Danube, the piers of which are said to have been 150 feet high, and 170 feet apart, which bridge there is much reason to believe consisted of a wooden platform.

Although the Romans did not use marble in the luxurious manner described by poets and travellers, yet costly stones and marbles of every variety were in requisition, and columns were made of Egyptian and other granite, and of porphyry. Even in Greece, and in the colonies, the Roman edifices might have been distinguished by the application of foreign marbles in their construction, had there been no other sign of their origin, arising from difference of style and execu-

tion. But such signs were not wanting to distinguish the Roman architecture from that of Greece: the mingling of columns and arches in the same building, at first arising from necessity, and afterwards copied and repeated through want of taste, destroyed all simplicity and harmony of arrangement; and the practice of the science went on deteriorating at Rome, until the most extraordinary combinations were the result. Specimens of such exist in the palace of Diocletian at Spalatro, in the temple of Pallas, and in the ruins of the forum of Nerva in Rome.

"It were an endless task," says Hope, "to recite the constructions so well adapted for every useful purpose, for every object of magnificence, reared within, or in the immediate vicinity of Rome;—aqueducts of prodigious length, which, from the adjacent mountains, carried in every direction streams of the clearest water across its vast plain into its inmost bosom; sewers of indestructible solidity, which again conveyed far away every species of impurity; roads as indestructible, as ours are perishable, which from the capital diverged on every side to the utmost confines of the peninsula, and on these roads, bridges, massy and durable, which joined the opposite banks of the widest rivers; forums, or public porticoes, where its population might meet and converse, sheltered from heat and rain, increased in the time of Augustus to the number of forty-five, and which, under Trajan, received the addition of that forum in which stood his triumphal column, surrounded by a forest of other pillars of granite of a single block of immense height and diameter; baths erected by Augustus, by Nero, by Titus, by Caracalla, and by Diocletian, each containing all that could serve for cleanliness, for health, for exercise, and for amusement; each seeming a palace in splendour, and a city in size, and still by their ruins astonishing the world: basilicas for the administration of justice, and the despatch of business, vast and superb beyond description; and even shambles so sumptuous, that on a medal of Nero, appears a building, inscribed 'Macellum Augusti*,' which, from the richness of its columns, might be mistaken for an amphitheatre; the Circus Maximus for races, whose incredible size and magnificence prevented not several others, little inferior to it, from successively arising; the amphitheatre of Vespasian, computed to contain 109,000 spectators, of which, after one-half had been pulled down in 1084 by the Norman, Guiscard, lest it should be used as a citadel against him, and the other half had furnished the popes with materials, with which to build the palaces, Farnese, of St. Mark, and of the Cancellaria, the remains have struck with amazement the beholders of every succeeding age; the mausolea of Augustus, of Adrian, and others; the gorgeous palaces of the emperors; the temples without number; the triumphal arches, the architraves, piers, cornices, acroteria of the richest granite, porphyries, and marble, such as to bewilder the imagination that pictures to itself the buildings to which they belonged, rising spontaneously, like plants wherever in a fruitful soil we thrust the spade. Not less remarkable were the buildings erected in the provinces far and near:—amphitheatres at Verona, in Cisalpine Gaul, at Arles, and Nismes, and Vienne beyond the Alps, and at Pola, on the Dalmatian shore, almost as stupendous as the Coliseum itself; Asia Minor, adorned by Augustus with several temples of the largest dimensions; Athens itself, endowed by Adrian with a temple of Jupiter Olympus, behind which the loftiest monument of her independence, that consecrated by Pericles to Minerva, hid its diminished head; Antioch doubled from what it was under its kings; and Alexandria made in the column, called of Pompey, to forget the lesser prodigality of its Ptolemies; a temple of the sun at Baalbec, of which the mere base contained three stones, measuring from back to front, exclusive of the bold and rich cornice, ten feet, five inches; from top to bottom thirteen feet, and collectively from end to end, one hundred and ninety-nine feet; buildings equally astonishing raised in the Decapolis of Palestine, and in the cities on the coast of Africa, and others not less splendid, erected in different parts of Spain; the bridge on the Danube, and the Pont-du-Gard in Gaul; the prodigious moles of different sea-ports; the gates of Arles, Nismes, Narbonne, Autun, and other cities innumerable; and even in a place scarce noticed in history, at Orange, one of the largest theatres known, and traces of an amphitheatre, and stadium, and naumachia, so stupendous, that we can only account for its construction in that situation, by supposing that the spot was one, where the whole population of surrounding provinces met periodically for purposes of festivity."

* The shambles of Augustus.

The subject of Roman architecture then being so vast, it cannot be expected that we should in this brief history enter into descriptive details of particular structures: nor indeed is it necessary, because the reader will find many accounts of the architectural remains of ancient Rome in the previous volumes of the *Saturday Magazine*. All we can afford to do is to institute a brief comparison between Greek and Roman architecture, before we move onward with the history of the art.

In the most magnificent results of Grecian architecture we observe a simplicity and unity, which are chiefly due to the system of unbroken horizontal lines in the upper and lower parts of their buildings: as these lines serve almost at a glance to mark the length and breadth of the building; so do the nearly vertical lines of its columns equally serve to show its height. The sculptured ornaments are sunk within the general face of the building, so as not to interfere with the outline: while a monotonous character is warded off from it by the elegant curves of the various mouldings. The skilful adjustment too, of the various parts, so as to produce a harmonious but ever varying effect of light and shade, according to the position of the spectator, must not be forgotten among the many excellencies of Grecian architecture.

But the Romans, setting aside their acknowledged love of ornament and display, were in the possession of the arch,—that wonderful structure, which, on account of the facility with which it might be everywhere employed, required the greater taste and caution in its adoption: this alone was sufficient to impart to Roman architecture an entirely new character which was absent in the Grecian. The Romans adopted the Grecian structures for their model, and often excelled them in extent and magnificence; but nearly always at the sacrifice of taste. "Skill in mechanics," says Hope, "is a faculty wholly distinct from taste in the fine arts: where the latter exists, or lies dormant, or retrogrades, the other may still advance, still make great and rapid strides. Thence the greater exigencies of the Romans in respect of architecture, the vaster buildings they had to raise and to cover, soon made them seek all the superior means, and develop all the superior powers of the arch." "Pillars and walls placed so far asunder that no blocks of stone, no beams of wood can connect them, may by the arch be embraced and combined. An area so spacious that no flat ceiling could cover it, may by the vault be closed in with equal solidity and durability; by means of the vault the expense of cutting, of carrying, of raising masses of immense weight, only to produce small intervening spaces, may be avoided. A less quantity of materials may be spread out over, and render habitable a much greater space. To form a just estimate of its capabilities, we need but glance at the Pantheon of pagan, and Saint Peter's of papal Rome."

In the construction of their temples, the Romans adopted the Grecian form with certain modifications in the proportions of the columns and entablature: they preferred the Corinthian order as admitting of greater ornament; but in the external forms of their buildings in general, we notice a great departure from their Grecian model by the construction of brick domes, lofty pediments, and the superposition of the orders. The construction of the dome implies great mechanical skill, which we readily ackowledge at the sight of such solid materials suspended as it were in the air, and held in equilibrium by the mutual pressure and support of a large number of single blocks of brick or stone, whereby in later times a degree of grandeur has been imparted to buildings, which the earliest specimens of architecture could not claim. In Roman buildings, too, the inclination of the sides of the pediment is in general greater than in Grecian examples; the consequence of which is a higher raised roof, which interferes with the simple system of horizontal and vertical lines, and indicates a less degree of skill in resisting the lateral pressure of the rafters, which is very great in low roofs. But climate has much to do with the forms of roofs; for while the low Grecian pediment, raised in the middle, was just sufficient to throw off the gentle showers of a mild climate, where violent storms seldom or never occurred, the high Roman pediment was necessary in a ruder climate, where storms and torrents of rain were not unfrequent.

With respect to the superposition of the orders, we are not aware of any Grecian example, because the Greeks did not build in stories. The Romans, however, in buildings of great height, found it difficult, if not impossible, to make columns of one order extend from bottom to top: they con-

sidered the building as being divided into several stories, and marked each story by a particular order, the strongest being placed lowermost, and the axes of the columns continued in the same vertical line. Thus, the Tuscan is stronger than the Doric, the Doric than the Ionic, and the Ionic than the Corinthian: therefore, if the Doric be the lowest order, the Ionic succeeds, and the Corinthian follows next. But, since the different stories of a building should be in a decreasing progression, the superior columns should be diminished in order to lessen the weight, and also to accomodate the heights of the windows.

Even in their best days, the Romans do not seem to have appreciated the simple beauties of architecture. They did not possess the genius to invent, and they scarcely commanded the taste to appreciate the inventions of the more refined Greeks. They neglected the essential conditions of beauty in their desire for ornament; and, consequently, the principle upon which all ornament ought to be founded, escaped them. They delighted rather in ostentation and luxury, vastness and magnificence, than in simple beauty. They approved of Grecian forms, and strove to outdo that nation, as well in arms as in architecture: they succeeded in the one, and failed in the other. They collected the ornamental parts of the Grecian orders, and often united and applied them with much inconsistency. The Doric they seldom employed on accouut of its severe inflexibility: they preserved its name, however, in an order which they substituted for it, in which the characteristic features were omitted, and which they made to differ from the Ionic and Corinthian only by its greater massiveness. The Ionic volute became in their hands less varied and graceful, and they deprived the Corinthian of those peculiarities so eminently characteristic of its origin, which, whether true or fabled, always occur to the mind at the sight of this graceful capital;—the acanthus rising round it with its tendrils curling beneath the superposed tile. These tendrils were transformed by the Romans into large volutes, or the volutes of the Ionic itself were substituted: and thus arose the COMPOSITE, which, so far from being an invention, was only an awkward combination of parts never intended to be combined. Sometimes they associated the Doric triglyph with the Ionic dentil: the Doric column with the Ionic entablature: "but among all these re-combinations of elements," says Hope, "we nowhere remark the discovery of any mode of decoration essentially new; and to this day the ornamental forms of ancient architecture are limited to the number exhibited by the Greeks in the days of their freedom."

The golden age of architecture in Rome was during the reigns of Augustus, Vespasian, Trajan, and Hadrian; but the honour of adorning the empire was not due to sovereigns alone,—it was shared with them by the governors of provinces, and even by private individuals. Herodes Atticus, a citizen of Athens, is one of the examples given of the wealthy subjects of the empire, who encouraged architecture by their munificence and zeal. But after a time, when individual property became insecure, and the mad profusion of bad emperors had exhausted or misapplied the treasures of the state, there being then no longer a demand for the talents of artists, the principles of art became neglected, and the cultivation of a pure taste gradually declined: so that, when a prince arose who would willingly have repaired the errors of his predecessors, and when a new edifice was to employ the skill of the architect, it was found that nothing remained of his former power, and that he had no resource but to copy and combine the different styles of building already in existence. Much ignorance of the proportions of the several parts of the building, and little regard to their connexion with each other, seems to have distorted the works of this period; while the profusion of ornament employed, was equally offensive to a correct taste.

From the death of Constantine, we may trace the rapid decline and corruption of the art. The triumphal arches of Severus, Gallienus, and Constantine, the edifices of Palmyra and Balbec, and the palace of Diocletian at Spalatro, are all overloaded with badly sculptured ornaments; in some of them we find columns which have been taken from other edifices, and which have been cut to the required length, without making the bulk of the shaft to correspond with their lessened height; and again, we find that others which were too short, have been raised to the required height by placing them on pedestals. The entablatures are often broken, and project over the capitals of the columns attached to the walls; thus destroying the unity of the horizontal band, and the fine effect arising from the long lines of shadow above the columns; while the pedestals interrupt and spoil the effect of the continuous basement, and the frieze, instead of presenting a vertical face, is cut into a cylindrical form, and bears the appearance of a beam crushed by the cornice above. The first principles of stability are violated, by the capricious employment o. columns with spiral flutings; pediments are inscribed in each other; some have not the horizontal cornice; others are bounded by a curve at the top; while the tympanum is occasionally broken in a vertical direction into three different faces; and the inclining sides in some are not continued to the apex. These gross deviations from the classic styles of Greece and Rome, like the gilded statues and colossal figures of the same period, indicate the wild excesses to which men were liable by neglecting to cultivate pure taste. As might be expected, sculpture declined before architecture; for though a building may require a greater effort of genius for its first invention, than is required for the formation of a statue, yet it is much easier to copy the proportions of an edifice than those of a human figure; in fact some of the most splendid buildings were erected at Rome when sculpture had ceased to exist as a fine art.

In the palace of Diocletian, at Spalatro, we find the earliest examples of arches springing from the tops of columns, which afterwards became common in ecclesiastical edifices, but which, in the building in question, presents a signal example of corrupt taste; for the column has the *appearance* (whatever may be its real strength) of being inadequate to the support of an arch and the building above it; nor is it in reality capable of supporting the thrust which every arch exerts, in a lateral direction, on its points of support. The corrupt style of the later ages of Roman architecture is visible in many of the representations of buildings depicted on the walls of Herculaneum and Pompeii, where we even find the forms and proportions of that style which has since been called the GOTHIC.

We have not yet alluded to one circumstance, which, trifling as it may appear, produced nevertheless considerable influence on the forms of ancient buildings: we mean the want of window-glass, that beautiful and admirable substance, the use of which we enjoy so much as a matter of ccurse, that we can scarcely imagine a house or large building destitute of it: and yet the ancients for a very long space of time were not able to admit any considerable quantity of light into their apartments without at the same time being exposed to all the inclemencies of climate and season; to avoid which, and at the same time to enjoy light, they had recourse to lamps. It was however customary for them, in the construction of their dwellings, either to leave small open spaces near the ends of the rafters which rested on the walls, or to introduce, just under the projection of the eaves, a sort of wide low window; and by either method a small share of light from without was obtained within. In their smaller temples the requisite illumination was obtained through a spacious entrance-door; and their larger temples were but partially roofed, so that light might descend and illuminate what was little better than a spacious court-yard. Dwelling-houses presented to the street nothing but a dead wall; all openings for light were directed towards a large open court. Even in the sumptuous baths of Titus, where the noble group of the Laocoon was in a room of the most costly marble, artificial light was employed for the display of these beauties. One effect of the obscurity of the ancient buildings, both public and private, was the transaction of so much business in the open forum, or public place. Public exhibitions were also made during the day-time in the open air; the theatres were without roofs; but an awning was provided to shelter the audience or spectators from the sun or the rain.

5. THE FIRST CHRISTIAN ERA.

IT need not excite surprise that the history of architecture in early times should relate chiefly to the public buildings, or places of worship of the ancients. Religion has exerted a powerful influence in all times, and among all nations, upon architecture, a complete history of which as a science, is little more or less than a history of man's progress in civilization. Until the time when our reformed faith exercised its benign influence, we find that man bestowed his care on his temples, rather than on his domestic dwellings, as if to propitiate the object of his worship by offering an abode fit for Divine occupation. The form and general construction too of the temple was influenced not only by the state of art in the country, but also by the pecu-

liar nature of the sacrifices offered therein. Before the great truth became fully impressed upon the human mind that God "desireth not sacrifice and delighteth not in burnt offering," the smoke of the heathen sacrifice rose high into the air from within the temples; for the same open roof which admitted the light, was also favourable to the peculiar forms of pagan worship.

In the early ages of Christianity, when those who had embraced its tenets were compelled, through dread of persecution, to keep their belief and their modes of worship as secret as possible, we find that religious assemblies were held in private houses, or even in public catacombs; but there is reason to believe that, as soon as the storm of persecution began to abate, the early Christians, zealous in the cause of their Divine Master, began to seek for the possession of public buildings for the celebration of religious worship. The intervals of persecution being short, they might not perhaps be able to *erect* churches, but they would seek to avail themselves of such edifices as were already in existence, and could easily be adapted to their purpose. Thus it has been found that the Christians were in possession of buildings, used as regular churches, before the time of Constantine, and that an edict was issued by that emperor for repairing, as well as rebuilding churches, thus proving that they were in existence at that period.

The Christian worship required not, like that of the heathens, extensive courts in which to perform their sacrifices; but consisting as it did chiefly of exhortation and prayer, a covered building of sufficient size to contain a large congregation, was all that was necessary for their purpose. Such buildings were the *basilicæ, i.e., royal* houses, apartments, or courts erected for the administration of justice. Constantine gave two basilicas, the Sessorian, and that in his palace of the Lateran, to serve as churches; and he afterwards built other churches after the same form. The ancient name of these buildings was preserved, and the new churches were also termed basilicæ, perhaps for the purpose of avoiding a name offensive to heathen ears, or it might be merely on account of their being designed after the form of those buildings. And when Theodosius had more firmly established the Christian religion as the religion of the empire, and had pulled down the churches of Constantine, which were already in a state of decay, with the smaller heathen temples, in order to use the materials for his new churches; he still retained the plan and the name of the *basilica.*

Nor could a more commodious form of building have well been found for the uses of Christian worship than that of these courts, the general form of which was rectangular, and divided into three or more parts by rows of columns parallel to the length of the building; another colonnade, at each extremity, crossed the former at right angles; in the middle of the end wall was a recess, in which was situated the tribune of the judge; and at that end of the building was formed a transverse division, by the discontinuance of the colonnades, which gave to the interior division the form of a CROSS. The recess formerly occupied by the tribune was found a convenient place for the altar; and that station it continued to occupy until artists were induced to alter the rectangular form of the building, in order to give to its exterior also the form of a cross. A transverse rectangle was now added, which crossed the former building at or near the middle of its length: the altar was placed in the intersection of the two, and that part of the church was afterwards surmounted with a dome or cupola, rising above the rest of the roof.

The body of the church or basilica was called the *nave,* perhaps on account of the early Christian constitutions, that the church should represent the ship* of St. Peter. This term was afterwards confined to the space between the central rows of columns, while the lateral divisions were called *aisles,* and the arms of the transverse rectangle, *transepts.* The form of the cross was different in the churches of Italy, and in those which were copied from them, to that which was adopted by the churches of Asia, Constantinople, and Greece. The Italian churches have the transverse building placed at, or near the extremity of the main body of the edifice, and this is called the *Latin cross.* Most of the churches of Asia, &c., have the buildings intersecting each other in the middle, in such a way as to make the four arms of equal length; and the centre, like the Italian churches, is covered by a dome. This plan of building bears the name of the *Greek cross.*

Between the colonnades and the walls, the basilicæ frequently had upper galleries; and when these buildings came to be devoted to the purposes of religion, the galleries were appropriated to the use of females, who could ascend to them by means of steps cut in the thickness of the wall, being themselves unseen by the rest of the congregation. Seven churches were built or consecrated in Rome during the reign of Constantine, who showed himself laudably disposed, now that the religion of Christ had been established in his empire, to erect for its service edifices that should do honour to it, as well as to the Roman name. Nevertheless the pagan worship does not seem upon the whole to have been much shaken at Rome during his reign. The central parts of the city appear to have been "wholly given to idolatry," and we find that all his churches were on the outskirts, at a distance from the walls.

When the seat of the empire was removed to Constantinople, that city was gradually adorned and elevated to a degree of magnificence almost equal to that of the ancient capital. It was enriched by Constantine with many stately edifices, among which were the cathedral of Sancta Sophia, or *Holy Wisdom,* and a church dedicated to the apostles. We are told by Gregoire de Tours, that a magnificent church in Auvergne and another in Palestine were built by Constantine. His mother Helena also caused several edifices for Christian worship to be erected in the east; the most celebrated being the church of the Holy Sepulchre at Jerusalem, and a church at Bethlehem.

Among the Latin churches, we find that the principal façade of the building was generally towards the west, while in the case of the primitive Greek churches, it is said to have been towards the east, that the priest in celebrating the service might have his face directed that way. The semicircular recess at one end of the basilica, had the name of *apsis,* which is a Greek word signifying an *arch,* and this was the place destined for the throne of the bishop. In front of the apsis was the Sanctuary, or Chancel, (which latter name is derived from the *cancelli,* or rails, which separated it from the nave,) elevated above the pavement, and approached by steps, but only by those who officiated as ministers. This sanctuary, which was at the east end of the building, contained the grand altar, and was separated from the rest of the building by a railing, or lattice-work. The *ambones,* or pulpits, were placed one on each side of the central division of the nave; and in the centre was the *presbyterium,* a place enclosed, and like our present choirs, appropriated to the deacons and chanters. Between the presbyterium and the entrance was the *narthex,* afterwards called *Galilee;* and this was devoted to the use of penitents. There were generally galleries over the aisles, with arcades in front, which have been supposed to have been a mere screen; but it is most likely that they were made for the purpose of supporting the roof.

We have already mentioned catacombs, as some of the first places where the meetings of the early Christians were held. The altars on which they performed their sacred rites were not unfrequently the tombs of some of their own community, who had undergone martyrdom for the sake of their faith. By degrees, as the remains of saints and martyrs came to be held in high veneration, and to be considered as gifted with peculiar sanctity, the custom became prevalent of erecting churches over their tombs; and a rule was finally established, never to consecrate an altar till the body of some saint had been placed within or beneath it. But, as these holy relics grew in importance and in the estimation of the people, it became desirable to advance them to some more conspicuous station, or one in which they might be more easily accessible by the number of pilgrims who came to visit them. A receptacle was therefore prepared for them in the centre of a lofty crypt, or vault, which was partly raised above, and partly sunk beneath, the level of the floor. A number of steps descending downwards led the way to this vault from the nave or transept; and other steps ascended from it to that part of the sanctuary raised over the crypt, while its contents might be seen from above through grated apertures. Immediately over the tomb of the saint was placed the altar, which, from its elevation to the summit of the crypt, became a more conspicuous object from all the other parts of the building.

Thus catacombs* which first afforded shelter to the early Christians, and a place for the performance of religious rites, and which afterwards became their burial-places, were ever after visited as holy places, and afforded models for imitation in the receptacles which were made for the bodies and limbs of saints in succeeding ages. The church of San Martino, at Rome, was built by Pope Symmachus, in the

* The Greek words for a *ship* and a *temple* are nearly identical.

* This word is derived from a Greek verb, implying *to sleep.*

year 500, over a subterraneous chapel which is still in existence, in which were deposited the remains of Pope St. Sylvester. There are also other crypts in Rome, at Ravenna, in the island of Torcello, at Verona, at Parma, Florence, Milan, &c.

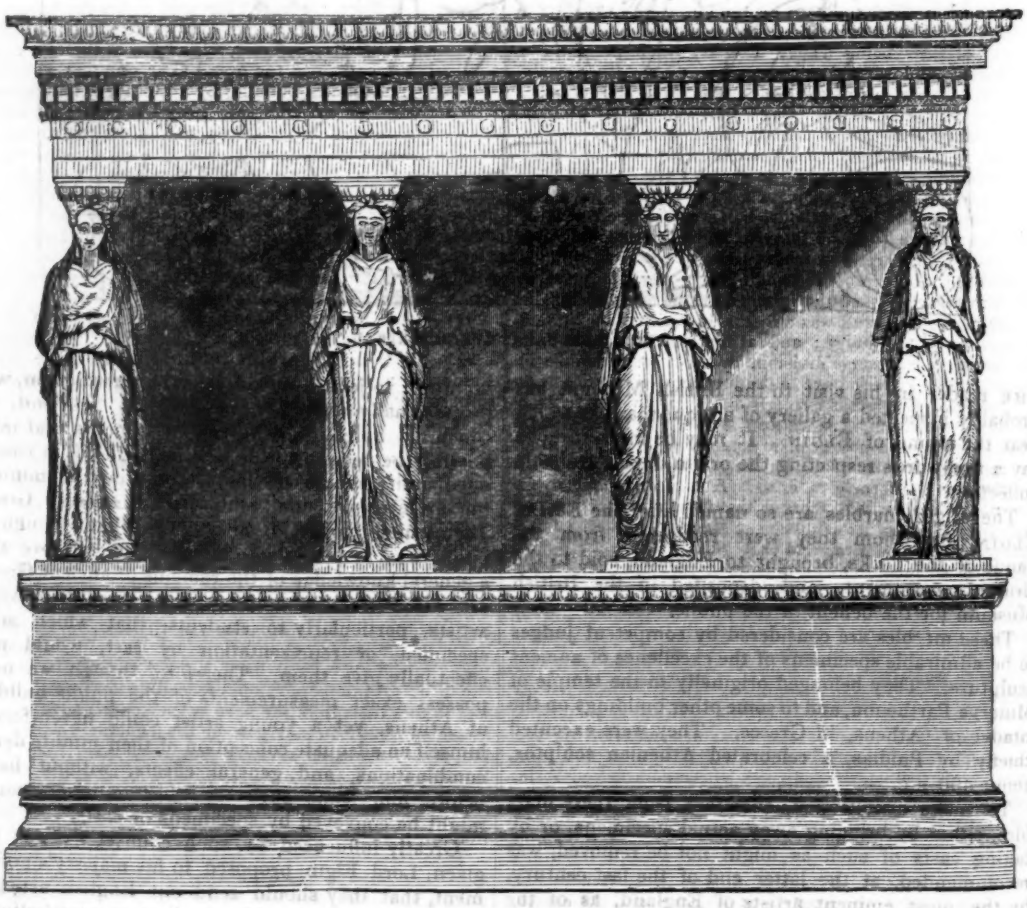
The cathedral of Sancta Sophia, at Constantinople, after having been twice destroyed by fire, was rebuilt by Justinian, about the year of our Lord 532. It was completed in about six years from the time of laying the foundation, and the work was carried on during that period under the daily personal inspection of the emperor, who pleased himself with the idea that he had even exceeded the temple of Solomon itself in the magnificence of this splendid edifice. The plan of the Greek cross was employed in this building, the centre of which is covered by a dome of admirable structure.

To the Christian religion may be attributed the rescuing of the remains of ancient architecture from ruin, and the revival of genius occasioned by the opportunity given to artists of employing their talents in the erection of buildings to the Divine honour. It is doubtful whether Constantine could have found the necessary supply of materials for all the buildings raised at Rome during his reign, but for the employment of fragments of the heathen temples; and in the adaptation of these to his purpose, he must in some measure have followed the design of the temples from which they came.

Thus, although some of the basilicæ of the heathens, which had been erected at an early period, might be equal in merit to the best works of the Augustan age, yet as those of a later date were doubtless constructed under the influence of the same bad taste which is visible in the baths and triumphal arches, so the churches also must have partaken of their defects: and this is really the case. In several instances the columns in these churches have been taken from other edifices, and fitted to their places by the expedient of cutting off from those which were too long, and mounting on pedestals those which were too short, for their purpose; and this without reference to the alterations thus made in the proportions of the members of the order.

Amidst this capriciousness of style and disregard of the principles of architecture, there was a love for that which might surprise and dazzle the beholder; and this feeling seems to have been experienced by Justinian, when he so perseveringly superintended the building of Sancta Sophia, according to the design furnished by Anthemius, his architect. The erection of the dome of this building must have been at that period a work of considerable difficulty; to raise a dome on the tops of four piers was then a novelty; and the horizontal pressure and thrust outwards being very great, the difficulty of resisting it must have been equally so; and accordingly we find that the dome failed twice before it could be rendered secure.

The recesses, which were almost universal in religious buildings, may probably have led to the formation of high and narrow windows; for the convexity of the wall would not permit broad windows to be made with either horizontal or arched tops, on account of the voussoirs projecting obliquely outward between their abutments, and consequently not being properly supported. Narrow windows would therefore naturally be preferred; and to obtain a sufficient degree of light, it would be necessary to increase their length in proportion to the diminution of their breadth. The construction of the church of Sancta Sophia has been very generally followed: the great ecclesiastical structures of Italy, and the mosques of Mohammedans present a nearly similar appearance.



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